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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/919,017	07/31/2001	William Alfred Reed	23-1	3689

7590 07/31/2003

Docket Administrator
Lucent Technologies Inc.
101 Crawfords Corner Road (Room 3J-219)
Holmdel, NJ 07733-3030

EXAMINER

CONNOLLY, PATRICK J

ART UNIT PAPER NUMBER

2877

DATE MAILED: 07/31/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/919,017	Applicant(s) REED ET AL.	
	Examiner Patrick J Connolly	Art Unit 2877	<i>h</i>

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 4-18 is/are pending in the application.
- 4a) Of the above claim(s) 3 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1,2,4 and 6-13 is/are allowed.
- 6) ☒ Claim(s) 5,14-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to claims 1-18 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,134,003 to Tearney et al. (hereafter Tearney) further in view of U.S. Patent No. 5,881,195 to Walker.

As to claim 5, Tearney teaches an optical system for monitoring or imaging a sample including:

a probe (see figure 7B, also column 9, lines 10-14) having an optical fiber (34) and a GRIN lens (54) fused to one end of the fiber;

an optical splitter or circulator (see figure 4, 130) to receive light from a source (2) and to direct a portion of the received light to the fiber; and

an optical detector (16) coupled to receive a portion of light collected from the sample by the GRIN fiber-size lens and to determine a characteristic of the sample from the received light.

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With further regard to claim 5, Walker teaches the advantages of having GRIN lenses without integral cladding for use in endoscopy including, for example, greater cross-sectioned surface area (see table 1, column 5, lines 55-58).

It would have been obvious to one of ordinary skill in the art at the time of invention to include a claddingless GRIN fiber lens into the endoscopic optical system of Tearney in order to improve imaging and brightness resolution.

Claims 14 and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,134,003 to Tearney et al. (hereafter Tearney) further in view of U.S. Patent No. 6,445,939 to Swanson et al. (hereafter Swanson).

As to claim 14, Tearney teaches an optical system for monitoring or imaging a sample including:

a probe (see figure 7B, also column 9, lines 10-14) having an optical fiber (34) and a GRIN lens (54) fused to one end of the fiber;

an optical splitter or circulator (see figure 4, 130) to receive light from a source (2) and to direct a portion of the received light to the fiber; and

an optical detector (16) coupled to receive a portion of light collected from the sample by the GRIN fiber-size lens and to determine a characteristic of the sample from the received light.

With further regard to claim 14, Swanson teaches GRIN lenses having focal lengths greater than 1 mm (see figure 2E, also column 2, lines 27-31), having obvious advantages for imaging internal structures of the body via a probe such as an endoscope.

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It would have been obvious to one of ordinary skill in the art at the time of invention to include the lens of Swanson in the optical system of Tearney for better imaging and monitoring purposes.

As to claim 16, a convex rounding of GRIN lenses is a notoriously well-known design in the art. While Tearney does not teach a convexly rounded GRIN lens specifically, it would have been obvious to one of ordinary skill in the art at the time of invention to include this design in the probe of Tearney.

As to claim 17, Tearney teaches a monitoring system (see Figure 4) comprising an optical interferometer having measurement (110) and reference arms (188) both arms being optically coupled (106) to receive light from the splitter or circulator, the measurement arm including the probe.

As to claim 18, Tearney teaches a variable path length in the reference arm (see Figure 4, 12).

Claim 15 rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,134,003 to Tearney et al. (hereafter Tearney) further in view of U.S. Patent No. 6,445,939 to Swanson et al. (hereafter Swanson) as applied to claims 14 and 16-18 above, and further in view of U.S. Patent No. 5,881,195 to Walker.

As to claim 15, Walker teaches the advantages of having GRIN lenses without integral cladding for use in endoscopy including, for example, greater cross-sectioned surface area (see table 1, column 5, lines 55-58).

It would have been obvious to one of ordinary skill in the art at the time of invention to include a claddingless GRIN fiber lens into the endoscopic optical system of Tearney in order to improve imaging and brightness resolution.

Allowable Subject Matter

Claims 1, 2, 4 and 6-13 are allowed.

The following is an examiner's statement of reasons for allowance:

As to claim 1, the prior art of record, taken alone or in combination, fails to disclose or render obvious an optical system for imaging or monitoring a sample including a probe having an optical fiber and a GRIN fiber-size lens with a rayleigh range that is greater than 200 microns, in combination with the rest of the limitations of claim 1.

As to claim 10, the prior art of record, taken alone or in combination, fails to disclose or render obvious a process for optically monitoring or imaging a sample including directing light from a fiber into a portion of the sample with a GRIN fiber-size lens that has a rayleigh range greater than 200 microns, in combination with the rest of the limitations of claim 10.

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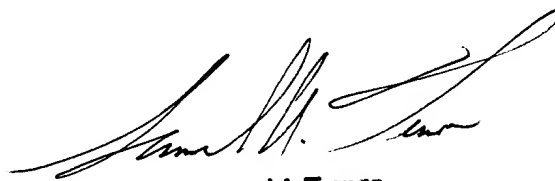
Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick J Connolly whose telephone number is 703.305.4397. The examiner can normally be reached on 9 am-5.30 pm ... Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on 703.308.4881. The fax phone numbers for the organization where this application or proceeding is assigned are 703.746.7722 for regular communications and 703.746.7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703.308.0956.

pjc /jc
July 16, 2003



Samuel A. Turner
Primary Examiner